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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,865	06/28/2001	Masanori Fukui	209545US0X	3123
22850	7590	07/01/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			HOFFMANN, JOHN M	
			ART UNIT	PAPER NUMBER
			1731	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/892,865

Applicant(s)

FUKUI ET AL.

Examiner

John Hoffmann

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 10 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Election/Restrictions

Claims 5-6 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Original claims 1-2 were directed a species where the baking is at a pressure. This is mutually exclusive of the invention/specie of claims 5-6 which require the baking occurs at more than one pressure.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 5-6 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 1-2 are generic to both species. If they are held allowable, then claims 5-6 will be rejoined.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4, 10-11 (and 5-6 under an alternative interpretation from above) are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukao 5211733 alone or in view of Osafune 4680045.

Col. 1, lines 27-36 disclose the Fukao powder is made by using a "solution". Solutions are wet because a solute is wetted by the solvent. Col. 4, lines 46-48 disclose the baking temperature. Col. 4, lines 64-68 discloses that the calcining may be done under a reduced pressure. The only limitation that Fukao does not teach is the pressure. It would have been obvious to reduce the pressure to the greatest extent possible, so as to maximize the effect of the vacuum. Alternatively it would have been obvious to perform routine experimentation to determine the optimal reduction in pressure.

Using the secondary reference, Osafune: Col. 3, lines 18-24 of Fukao indicates that the calcining causes the density of the powder to increase. It is clear that this density increase is not caused by sintering: col. 4, lines 48-50. Osafune is directed to making glass bodies from a sol gel process. At col. 9, line 64 - col. 10, line 8 Osafune discloses that when the silica material is heated in the same temperature range that Fukao uses, that the pores in the material close (see also col. 8, line 44 which discloses that step 6 is directed to pore closure). It would have been clear to one having both the references that the Fukao densification is caused by the elimination of pores (since they are both treating the same material at the same temperature). Although Osafune does not disclose the degree of vacuum: it would have been obvious to use the strongest vacuum possible, so as to remove the most amount of gas possible to prevent the enclosure of gas (bubbles) in the glass as taught by Osafune.

Claim 2: See above. Further, claim 2 requires baking a gel powder at atmospheric and at a temperature within a range. IN Fukao, col. 3, line 5 indicates that

there is a step of drying, pulverization and calcining. Furthermore, col. 1, lines 27-32 refers to the same three steps, but in a different order (drying, calcining and pulverization). Examiner points out the order, because if one were to interpret the disclosure of the specific order, such might suggest the that bulk material is dried – as opposed to drying a powder. Examiner interprets the first claimed baking to be the same as the drying in Fukao. No details of Fukao drying is disclosed. As to the temperature at which hydroxyl groups are removed: that is what drying is. Water molecules comprise a hydrogen ion and a hydroxyl group. It would have been obvious to use an elevated temperature, because things dry quicker at higher temperatures. As to atmospheric pressure: it is well known that things can dry at atmospheric pressure. IT would have been obvious to dry at atmospheric pressure because it would be a hassle to provide a sub-atmospheric or a super atmospheric pressure.

Claim 4: is met for the reasons given above.

Claims 10-11 are met - one would expect the same purity levels because the prior art would result in the same process that Applicant conducted. Alternatively, it would have been obvious to calcine the powder to make the powder as pure as possible.

Claims 5-6: This rejection is made in the event Examiner misinterpreted the claims and the claims are not mutually exclusive: Namely: Claim 5 refers to “when the low pressure atmosphere reaches a preselected temperature” - however there is no requirement of a step of reaching a preselected temperature. Of all the reasonable

ways to interpret this claim, it is deemed the broadest is essentially: if there is a preselected temperature, and if that preselected pressure is reached, then the low pressure is finished. Since the references do not have the preselected pressure, the "if" conditional statements are not met – and therefore the resultant (i.e. the finishing) is not required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 and 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-2 refer to a range of "less than 100 Pa". It is indefinite as to whether the breadth of the range is less than 100 Pa, or that all values of the range are less than 100 Pa, or that at least one value of the range is less than 100 Pa, or something else.

Allowable Subject Matter

Claim 3 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

The prior art does not recognize the three baking steps: the baking of the gel powder and the two bakings of the synthetic quartz powder: one at atmospheric and one at a low pressure.

Response to Arguments

Applicant's arguments filed 15 June 2004 have been fully considered but they are not persuasive.

It is argued that Fukao's pressure is not very low because it requires a gas flow through the moving bed. And that the constant introduction of gas will prevent a "high vacuum". There is no evidence to support this argument. Examiner cannot see any reason why there cannot be a flow of gas at essentially any pressure – from 1 torr to thousand atmospheres. It may very well be that below some pressure level, it is physically impossible for one to create a gas flow, but there is no evidence or rationale which demonstrates.

It is also argued that there is no reasonable expectation that the prior art would have successfully let the artisan to the vacuum baking feature of claims 1-2. There is a presumption all US patents are valid, that includes the presumption they are all enabled – including the Fukao vacuum baking. Thus there is a presumption that one can flow gas at a reduced pressure. An allegation that Fukao is not enabled is insufficient – evidence is needed.

Applicant's characterization of "high vacuum" is not agreed with. A "rough vacuum" (or coarse vacuum) can be as low as 133 Pa, and a "medium vacuum" is typically within the range of 0.133 – 133 Pa. A high vacuum is usually no more than 0.133 Pa – almost 1000 times less than what is being claimed.

It is argued that the prior art does not recognize the removal of carbon. The relevance of this is not understood. The claims do not require the removal of carbon. Furthermore, the claims are so broad that they read on a very brief baking time – including times which are too brief to remove carbon. For a new an unexpected result to be relevant, there must be some reason to believe that the claims are of a scope that results in the unexpected result. The present claims encompass a much broader scope and thus encompass methods which do not have the desired result.

For claim 10, it is argued that the prior art is silent about residual gases present in the vacuum. Col. 4 Lines 18- 45 clearly teaches that carbon (i.e. carbon dioxide) is removed from the powder, and that helium, argon or nitrogen can be used to sweep out any residual gases. It is clear that Fukao teaches to remove residual gases.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

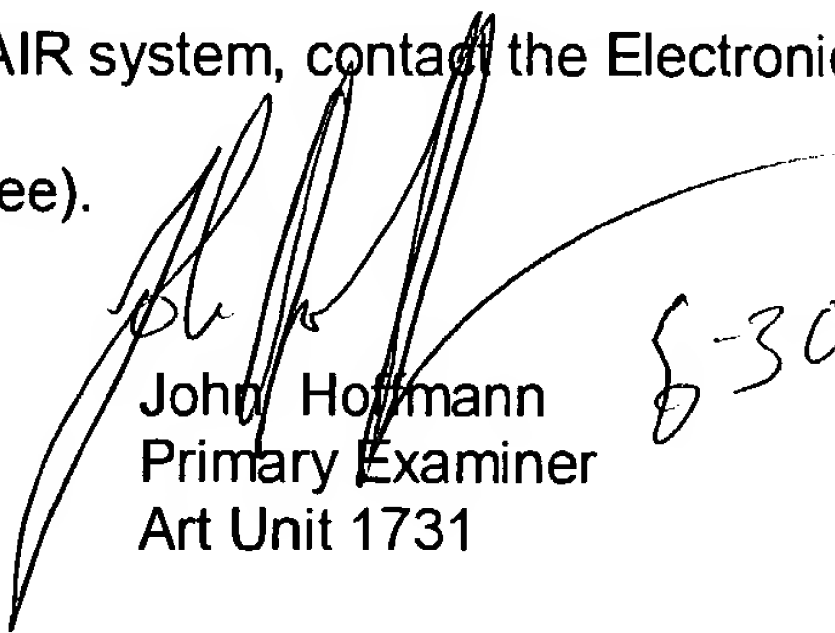
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


John Hoffmann
Primary Examiner
Art Unit 1731

6-30-04

jmh